

ARTIFICIAL INTELLIGENCE SENIOR LEVEL

Problem Statement:

Participants are invited to compete in a series of challenging rounds—Preliminary, Zonal, and Final—within the Teck League. The competition focuses on exploring and innovating within the field of agriculture using AI technology. Participants will showcase their expertise in artificial intelligence (AI) and their practical applications in addressing agricultural challenges.

PRELIMINARY ROUND

Participants will navigate through 30 multiple-choice questions (MCQs) within a 20-minute time frame. Questions will cover the following areas:

- **AI and ML Concepts:** Fundamentals of artificial intelligence, machine learning algorithms, and their applications.
- **Libraries and Tools:** Knowledge of popular libraries and tools used in AI and machine learning (e.g., TensorFlow, scikit-learn).
- **Agriculture-Related Questions:** Understanding of agricultural practices, challenges, and the potential applications of AI and ML in agriculture.

ZONAL ROUND

In the zonal round, contestants will receive a specific problem statement related to agriculture. They must apply supervised learning techniques to predict outcomes or patterns based on provided datasets. Key tasks include:

- **Data Analysis:** Conducting thorough data analysis to preprocess and explore the provided datasets before applying supervised learning techniques.
- **Prediction:** Developing a predictive model using supervised learning algorithms tailored to agricultural data.
- **Visualization:** Creating meaningful visualizations to illustrate trends, relationships, or predictions derived from the model.
- **Metrics:** Calculating and interpreting metrics such as accuracy, precision, recall, and F1-score to evaluate the performance of their solution.

FINAL ROUND

During the final round, participants will tackle a new agricultural problem statement that necessitates the use of unsupervised learning techniques. Tasks include:

- **Data Analysis:** Performing comprehensive data analysis to understand and preprocess the dataset before applying unsupervised learning techniques.
- **Clustering:** Applying unsupervised learning algorithms to uncover hidden patterns or groupings within agricultural data.
- **Visualization:** Creating insightful visual representations of the clustered data.
- **Evaluation:** Assessing the quality of clustering using appropriate metrics like silhouette score or inertia.